

## CLAIMS

1. A thermoplastic layered alkyl siloxane with the composition represented by the general formula  $(\text{RSi}_{1+x}\text{O}_{2+1.5x+0.5z}\text{L}_z)_m$  (here, R is an alkyl group, L is H, Si or a group capable of easily changing the OL group into the OH group in a solution or a suspension, and  $0.5 \leq x \leq 2$ ,  $2 \leq m \leq 200$ ,  $0 \leq z$ ).

2. The thermoplastic layered alkyl siloxane according to claim 1, characterized in that the melting point is in a temperature range of -30 to 60°C.

3. The thermoplastic layered alkyl siloxane according to claim 1 or 2, characterized in that the decomposing temperature is 300°C or more.

4. A production method for the layered alkyl siloxane according to any one of claims 1 to 3, characterized in that an alkyl silane compound represented by the general formula  $\text{RSi}(\text{OL})_3$  (here, R is an alkyl group, L is H, Si or a group capable of easily changing the OL group into the OH group in a solution or a suspension) is reacted with water in a solvent or a dispersion medium.

5. The production method for a thermoplastic layered alkyl siloxane according to any of claim 4, characterized in that a silicon compound represented by the general formula  $\text{Si}(\text{OM})_4$  (here, M is H, Si or a group capable of easily changing the OM group into the OH group in a solution or a suspension) is reacted in a solvent or a dispersion medium.

6. The production method for a thermoplastic layered alkyl siloxane according to claim 4 or 5, characterized in that an alkaline reagent or an acidic reagent is used as a catalyst.

**7. The production method for a thermoplastic layered alkyl siloxane according to any one of claims 4 to 6, characterized in that an ammonium is used as a catalyst, and reaction is carried out with the reagent concentration in the reaction liquid of 10 wt% or more at 50°C or more.**

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**8. The production method for a thermoplastic layered alkyl siloxane according to any one of claims 4 to 7, characterized in that the reagent concentration in the reaction liquid is controlled in a range of 10 to 80 wt% in the reaction temperature ranging from 50 to 200°C.**

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**9. A coating agent, characterized in containing the thermoplastic layered alkyl siloxane according to any one of claims 1 to 3 as the effective component.**

**10. A compact, characterized in being shaped using the thermoplastic layered alkyl siloxane according to any one of claims 1 to 3.**

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**11. The compact according to claim 10, characterized in being a thin film.**

**12. The compact according to claim 11, characterized in that the thin film is a single layer of an inorganic/organic composite.**

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**13. A filler, characterized in using the thermoplastic layered alkyl siloxane according to any one of claims 1 to 3 for providing at least a part thereof.**

**14. An energy storing material, characterized in using the thermoplastic layered alkyl siloxane according to any one of claims 1 to 3 for providing at least a part thereof.**

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**15. A temperature sensor, characterized in using the thermoplastic layered alkyl siloxane according to any one of claims 1 to 3 for providing at least a part thereof.**